



Facts about Pneumonic Plague

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Biological Weapon

- A weapon designed to aerosolize the plague bacterium could cause a rapidly severe and fatal disease in exposed persons.
- The *Yersinia pestis*, the causative agent of plague, is found in rodents and their fleas in many areas around the world, and can be grown in large quantities and disseminated by aerosol, the result could be an epidemic of the pneumonic form with the potential for secondary spread of cases.
- A bioterrorism attack would be characterized by pneumonic cases occurring simultaneously in persons 1 to 6 days following a common exposure, and in a secondary wave in unprotected case contacts.
- There are no effective environmental warning systems to detect an aerosol of plague bacilli.

The Disease

- Although pneumonic plague is an uncommon form of the disease, large outbreaks of pneumonic plague have occurred.
- The patient typically experiences fever, prostration and rapidly developing pneumonic plague (shortness of breath, chest pain, and cough), often accompanied by gastrointestinal symptoms (nausea, vomiting, abdominal pain and diarrhea).
- The first signs of illness would be expected to be fever, headache, weakness and cough with bloody, sometimes watery sputum. In 2 to 4 days the illness would lead to septic shock and without early treatment high mortality.
- Before antibiotic treatment, nearly 100 percent of cases were reported to be fatal.
- A pneumonic plague outbreak would initially resemble an outbreak of other severe respiratory illnesses, but would quickly be distinguished by the rapid development of life threatening respiratory failure, sepsis, and shock.
- Antibiotics need to be given within 24 hours of first symptoms to prevent high mortality.

The Risk

- Primary pneumonic plague results from the inhalation of plague bacilli.
- Person-to-person transmission of pneumonic plague occurs through respiratory droplets, which can only infect those who have direct and close (within 6 feet) exposures to the ill patient.
- *Yersinia pestis* is very sensitive to the action of sunlight and does not survive long outside the host. Research suggests it may survive in the exposed environment for up to one hour.
- Immediate notification of suspected plague to local or state health departments is essential for rapid investigation and control activities, and for definitive tests through a state reference laboratory or the CDC.
- Confirmatory testing for *Yersinia pestis* usually takes from 24 to 48 hours; presumptive identification by fluorescent antibody testing takes less than 2 hours.
- Few physicians in the United States have ever seen a case of pneumonic plague.
- Vaccine against plague does not prevent the development of primary pneumonic plague, and is not presently available in the U.S.
- The fatality rate of patients when treatment is delayed more than 24 hours after symptom onset is extremely high.

Treatment

- Early treatment and prophylaxis with streptomycin or gentamicin antibiotics, or the tetracycline or fluoroquinolone classes of antimicrobials are advised.
- In a community experiencing a pneumonic plague epidemic, all persons who develop a fever or new cough should promptly begin antibiotic treatment.
- Persons having household, hospital, or other close contact with persons with untreated pneumonic plague should receive postexposure antibiotic treatment for 7 days. (Close contact is defined as contact with a patient at less than 2 meters.)
- The use of disposable surgical masks is recommended to prevent the transmission of pneumonic plague to persons in close contact with cases.

For more information about pneumonic plague see "Plague as a Biological Weapon, Medical and Public Health Management:" JAMA, May 3, 2000—Vol 283. No. 17, pp. 2281-2290

Additional information about biological agents is available online at <http://www.bt.cdc.gov/bioagents.asp>